In-Station Diagnostics

South Coast AQMD

November 14, 2006

Louis Roberto

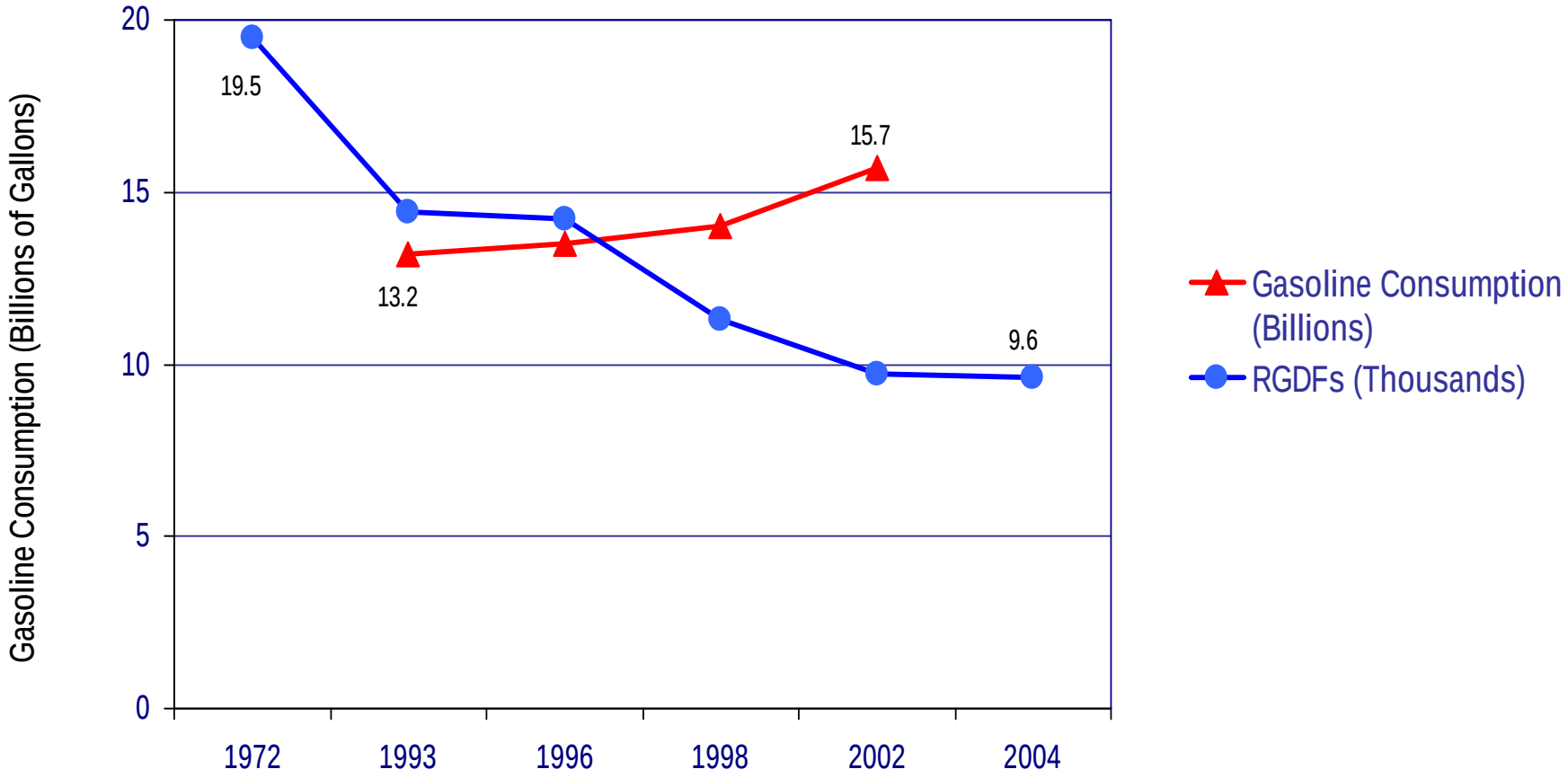
Presentation Overview

- South Coast AQMD Background Information
- Enhanced Vapor Recovery (EVR)
- In-Station Diagnostics (Non-Discriminating)
- Issues/Trends
- Questions / Answers

Background

- ARB adopts EVR Modules (March 2000)
- Rule 461 amended (April 2000)
- Record Gasoline Dispensing Throughputs
- ISD (Non-Discriminating)
  - Installation
  - Maintenance
  - Testing
  - Fueling Point Usage

Gasoline Consumption In California

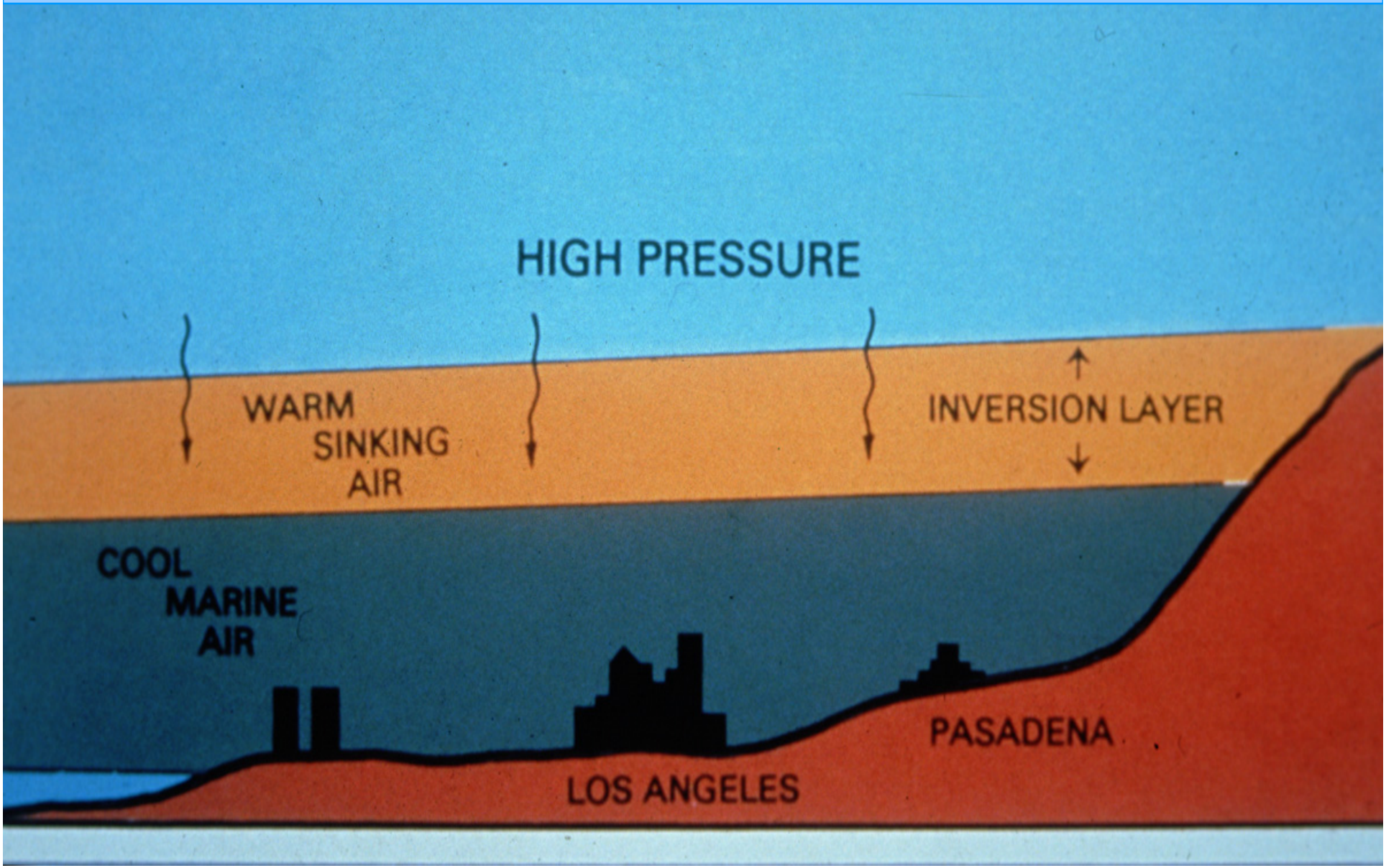


South Coast Air Basin

- Basin Population - 17 Million
- Number of Vehicles - 12 Million
- Retail GDF - 3,400
- Non-Retail GDF - 1,900

- *Approximately 7 Billion Gallons of Gasoline Dispensed Annually*

Inversion Layer Traps Smog Near Ground Level



South Coast AQMD

Pre-EVR Phase II Systems

- Retail Gasoline Dispensing Facilities (GDFs)
  - Balance 1,700
  - Vacuum Assist 1,700
    - Dresser Wayne 850
    - Gilbarco 850
  - Totals 3,400

South Coast AQMD
ORVR & Phase II EVR

- Retail Gasoline Dispensing Facilities (GDFs) – '06

– Balance	2,897
– Healy G-70-191	222
– Healy VR-201-A	124
– Healy VR-202-A	126
– Gilbarco VaporSaver	36
– Hirt	7
– Totals	3,412

VaporSaver (ORVR)

Healy Phase II EVR

In-Station Diagnostics

Balance System

Enhanced Vapor Recovery Modules

Phase I Systems

- Module 1: Phase I vapor recovery (Completed)

Phase II Systems

- Module 2: Phase II vapor recovery standards & specs
- Module 3: Onboard refueling vapor recovery (ORVR) compatibility (Completed)
- Module 4: Liquid retention & nozzle spitting (In Progress)
- Module 5: Spillage and dripless nozzles (In Progress)
- Module 6: In-Station Diagnostics (ISD)

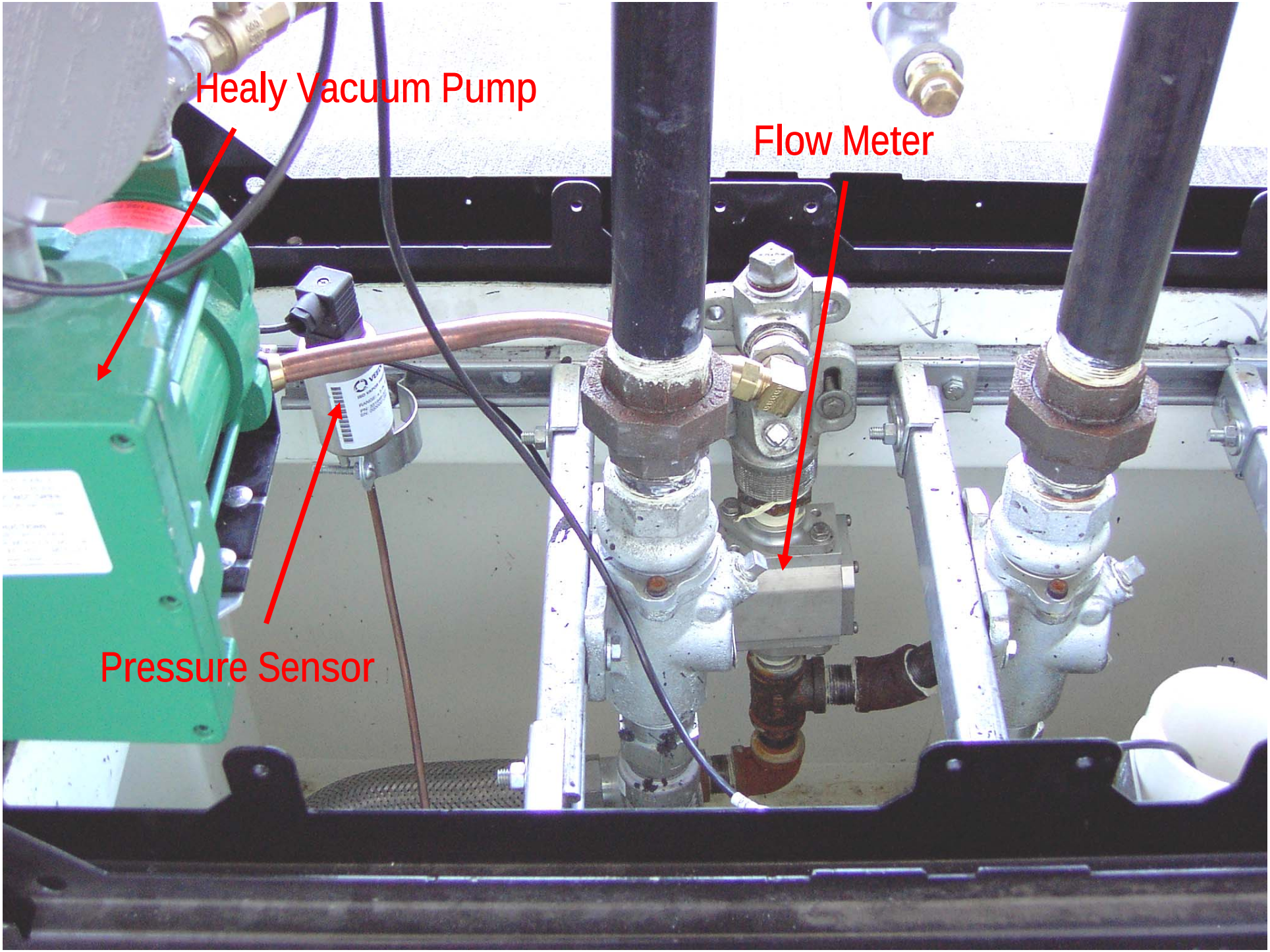
EVR & ISD Implementation

	Installation Deadline	Installation Deadline	Installation Deadline
Phase I EVR	*July 1, 2001* • New GDFs		*April 1, 2005* • Existing GDFs
ORVR Compatibility	*September 1, 2005* • GDFs > 2 million gal / year in 2003 (> 166,666 gal / month)	*January 1, 2006* • GDFs 1 to 2 million gal / year in 2003 (> 83,333 gal / month)	*March 1, 2006* • GDFs < 1 million gal / year in 2003 (< 83,333 gal / month)
Phase II EVR	*April 2005* • New GDFs	*April 2009* • Existing GDFs	
ISD	*September 1, 2005* • GDFs > 1.8 million gal / year (> 150,000 gal / month) *September 1, 2009* • Existing GDFs	*September 1, 2006* • GDFs > 600,000 gal / year (> 50,000 gal / month) *September 1, 2010* • Existing GDFs	
South Coast AQMD 2000	*September 1, 2010* • GDFs > 50,000 gal / month 94%	• GDFs < 50,000 gal / month 6%	

GDFs - Phase II Vapor Recovery

- Balance Systems
  - Certified as ORVR compatible
  - *Currently not Phase II EVR certified*
- Vacuum Assist Systems
  - Certified as ORVR compatible
    - Hirt (Combustion)
    - Gilbarco VaporSaver (Cell Membrane)
    - Healy G-70-191
    - Arid Technologies (Cell Membrane)
  - Certified as Phase II EVR & In-Station Diagnostics (ISD)
    - Healy VR-201 (CAS)
    - Healy VR-202 (CAS with Veeder-Root ISD)

In-Station Diagnostics Installations Commence


Healy Vacuum Pump
Flow Meter
Pressure Sensor

In-Station Diagnostics (Non-Discriminating System)

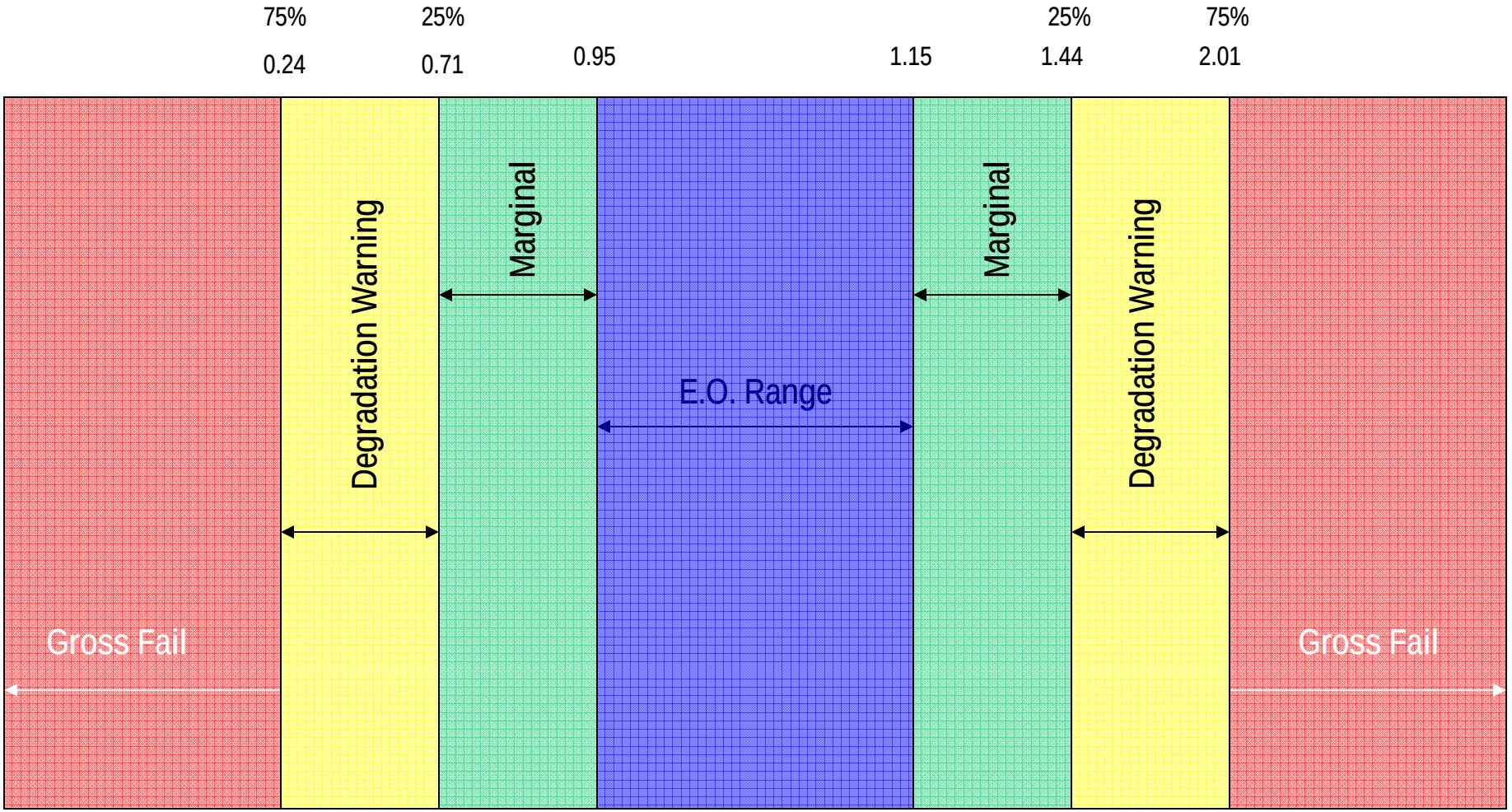
- ISD Monitor with Printing Capabilities
- Vapor Collection
- Vapor Containment
- Fuel Deliveries

EO VR-202-A In-Station Diagnostics Monitor

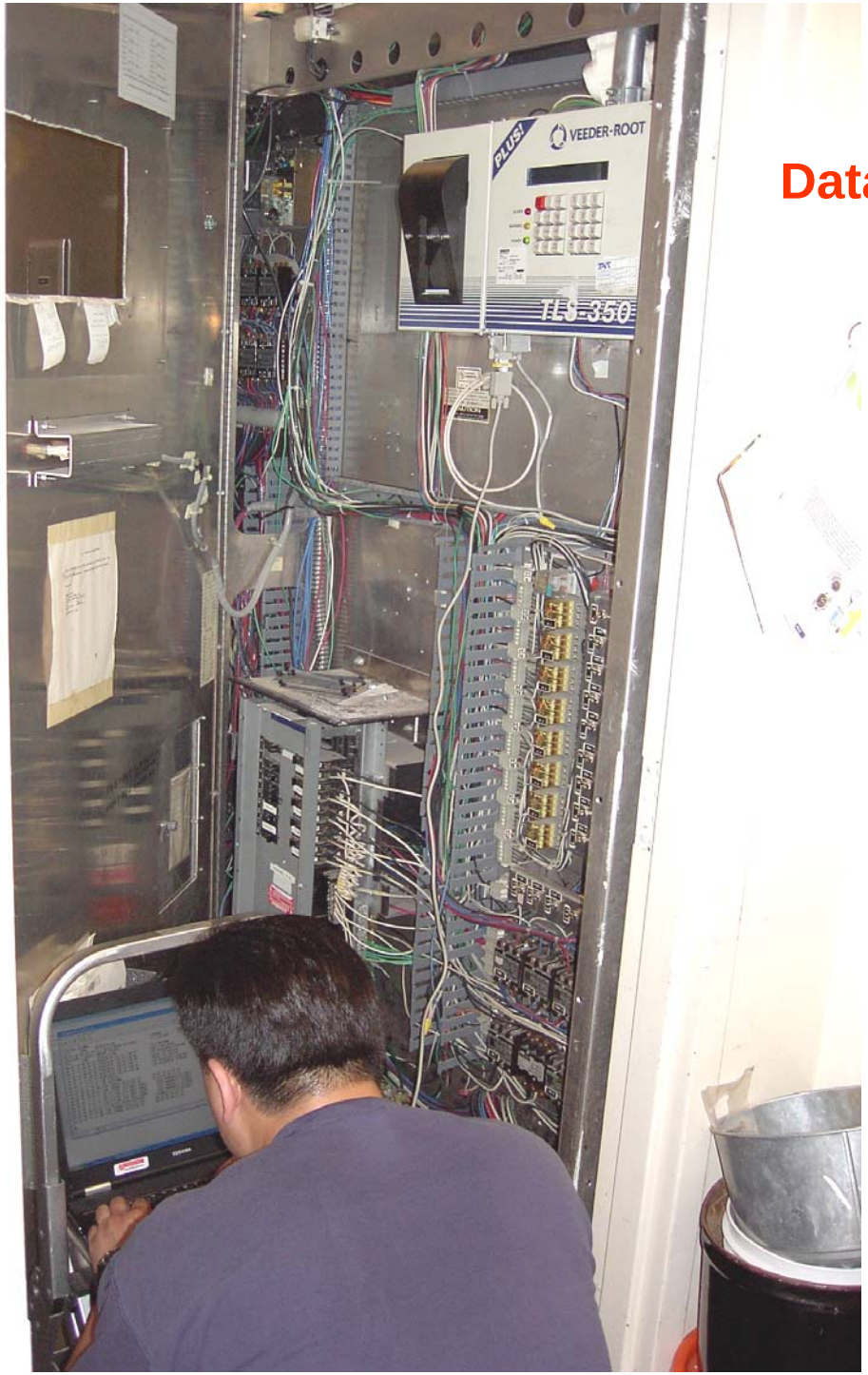
Veeder-Root TLS-350

In-Station Diagnostics (ISD) V/L Ratio Alarms

75% and 25% of the V/L Value



Data Acquisition



ISD Monitor Warning Alarms

IV0100 (Alarm History Code)
AUG 16, 2006 1:29 PM

WARNING ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
06-07-30	06:00:09	A/L RATIO GROSS BLOCKAGE	FP12 BLEND3	BLKD
06-07-27	06:00:09	A/L RATIO DEGRADATION	FP 4 BLEND3	0.00
06-07-27	06:00:09	A/L RATIO GROSS BLOCKAGE	FP 4 BLEND3	BLKD
06-07-26	06:00:09	A/L RATIO DEGRADATION	FP 4 BLEND3	0.00
06-07-25	06:00:09	A/L RATIO DEGRADATION	FP 6 BLEND3	0.00
06-07-24	06:00:09	A/L RATIO DEGRADATION	FP 6 BLEND3	0.00
06-07-24	06:00:09	A/L RATIO GROSS BLOCKAGE	FP 6 BLEND3	BLKD
06-07-24	06:00:09	A/L RATIO DEGRADATION	FP 4 BLEND3	0.00
06-07-24	06:00:09	A/L RATIO GROSS BLOCKAGE	FP 4 BLEND3	BLKD
06-07-22	06:00:09	A/L RATIO GROSS BLOCKAGE	FP 6 BLEND3	BLKD

ISD Monitor Warning Alarms

OCT 10, 2006 12:08 PM

7-11 33610

PANORAMA CITY CA 91402

ISD ALARM STATUS REPORT

WARNING ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
06-09-18	00:00:09	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	2.05
06-09-17	00:00:09	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	2.14
06-09-16	00:00:09	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	2.14
06-08-21	00:00:26	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	3.20
06-08-14	00:00:09	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	1.37
06-08-01	00:00:09	CONTAINMENT GROSS OVER PRESSURE	WEEKLY 95%	2.86

ISD Monitor Warning Alarms

IV0100
OCT 5, 2006 11:49 AM

WOODLAND HILLS ,CA

ISD ALARM STATUS REPORT

WARNING ALARMS

DATE	TIME	DESCRIPTION	READING	VALUE
06-10-03	10:00:09	A/L RATIO DEGRADATION	FP12 BLEND3	0.00
06-10-03	10:00:09	A/L RATIO GROSS BLOCKAGE	FP12 BLEND3	BLKD
06-10-01	10:00:09	A/L RATIO GROSS BLOCKAGE	FP 5 BLEND3	BLKD
06-09-26	00:00:09	A/L RATIO DEGRADATION	FP 5 BLEND3	0.00
06-09-26	00:00:09	A/L RATIO GROSS BLOCKAGE	FP 5 BLEND3	BLKD
06-08-07	00:00:17	VAPOR CONTAINMENT LEAKAGE	CFH@2 INCHES WC	8.58
06-08-06	00:00:21	VAPOR CONTAINMENT LEAKAGE	CFH@2 INCHES WC	8.68
06-07-26	00:00:09	VAPOR CONTAINMENT LEAKAGE	CFH@2 INCHES WC	26.29
06-07-25	00:00:09	VAPOR CONTAINMENT LEAKAGE	CFH@2 INCHES WC	27.56
06-07-18	00:00:09	VAPOR CONTAINMENT LEAKAGE	CFH@2 INCHES WC	25.07

ISD Monitor Warning Alarms

IV0100
AUG 1, 2006 10:52 AM

IRVINE,CA. 92616

ISD ALARM STATUS REPORT

GROSS & DEGRD TEST SHUTDOWN & MISCELLANEOUS EVENTS

DATE	TIME	DESCRIPTION	ACTION/NAME
06-06-27	11:44:29	CONTAINMENT VAPOR LEAKAGE	TEST MANUALLY CLEARED
06-06-27	11:44:25	CONTAINMENT GROSS & DEGRD	TEST MANUALLY CLEARED
06-06-27	11:43:54	PUMPS MANUALLY RE-ENABLED	
06-06-19	15:32:59	COLLECTION TEST HH06 GRADE	TEST MANUALLY CLEARED
06-06-19	15:32:39	CONTAINMENT VAPOR LEAKAGE	TEST MANUALLY CLEARED
06-06-19	15:32:29	CONTAINMENT	TEST MANUALLY CLEARED

TP-201.3 Testing Issues

2 Inch
Pressure Decay
TP201.3

1 OF 7

Ref. No.:
AQMD Id:
Site Name:
Address:

Phone:

Phase I Syste
Phase II Syste

Total # of Nozzl
Products per Nozzle 3

Tank Information		1	2	3	4	All
1.	Product Grade	87	91			
2.	Actual Tank Capacity, gallons	19703	14976			34679
3.	Gasoline Volume, gallons	7118	4295			11413
4.	Ullage, **(V)** gallons (line #2 minus line#3)	12585	10681			23266
Test Information		TEST #1	TEST #2	3	4	5
5.	Start time	9:15	10:00			
6.	Initial Test Pressure, inches H_2O	2.00	2.00			
7.	Pressure after 1 minute, inches H_2O	1.91	1.99			
8.	Pressure after 2 minutes, inches H_2O		1.97			
9.	Pressure after 3 minutes, inches H_2O		1.96			
10.	Pressure after 4 minutes, inches H_2O		1.95			
11.	Pressure after 5 minutes, inches H_2O		1.94			
12.	Allowable Final Pressure	1.94	1.94			
13.	Pass / Fail (Enter "GF" for Gross failure)	FAIL	PASS			

9/6/06	Requested Test Date.
9:00	Requested Test Time.
DIGITAL	What type of pressure device used?
8/1/06	Calibration date for pressure device (90 days).
1.03 1.03	Enter initial tank ullage pressure (Vent if over 0.5 in. w.c., then start the 30 min no dispensing period)
4	Enter flowmeter rate, **F**(Must be 1 to 5 CFM).
3.82	Calculate ullage fill time, t_2. 23766 / 6088 $t_2 = \frac{V}{[1522]F}$
7.64	Calculate gross failure time (Twice t_2).
.00	Enter ending value of drift test (Must be 0.01 in. w.c. or less).
1.61 / 87	Record Vapor Coupler Integrity Test Assembly pressure after 1 minute and location.
phase I	Nitrogen introduction point. Phase I vapor coupler or Phase II vapor riser?

Tester:

Signature:

Static Leak Decay Test – TP-201.3

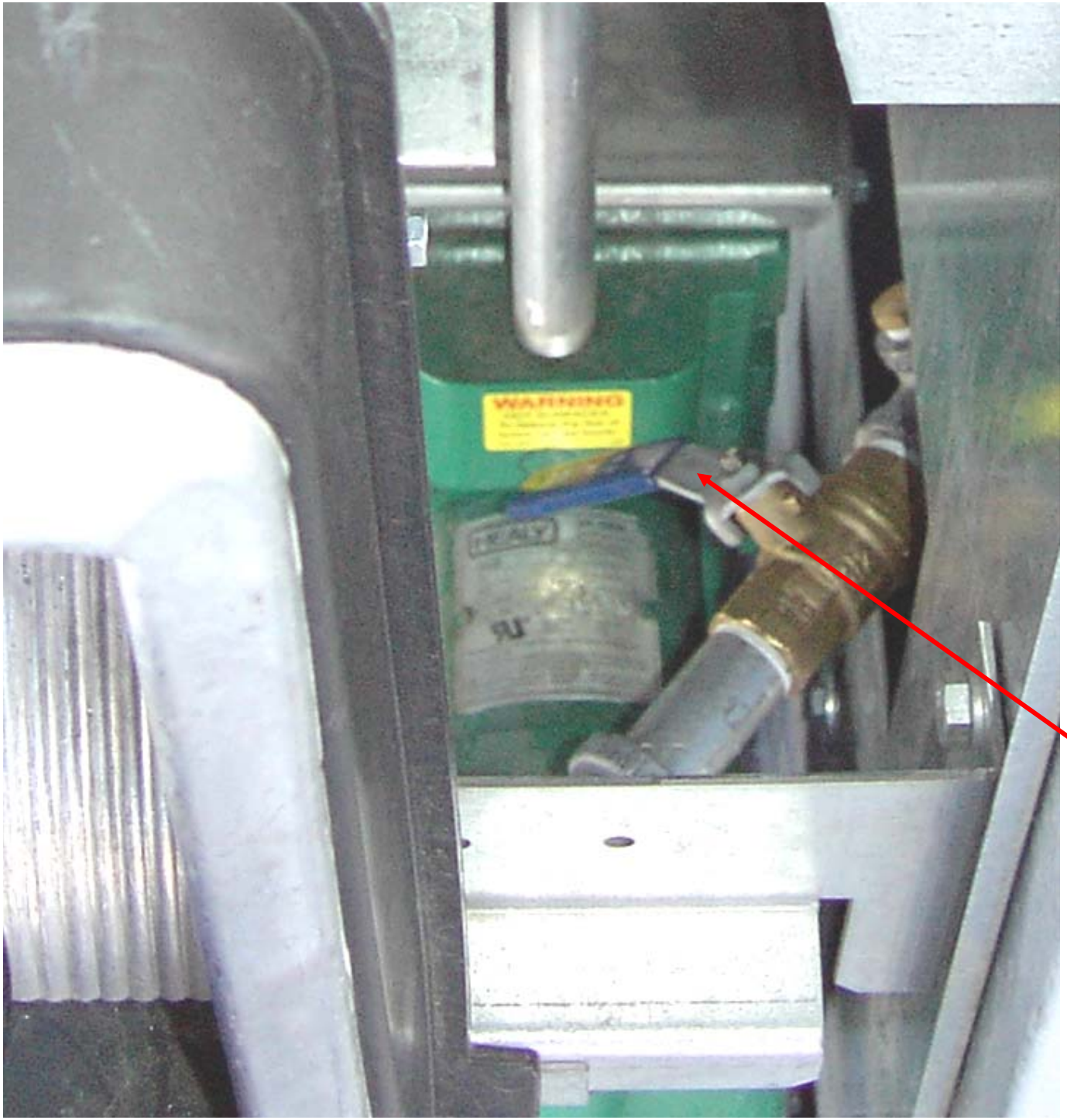
Repairs:

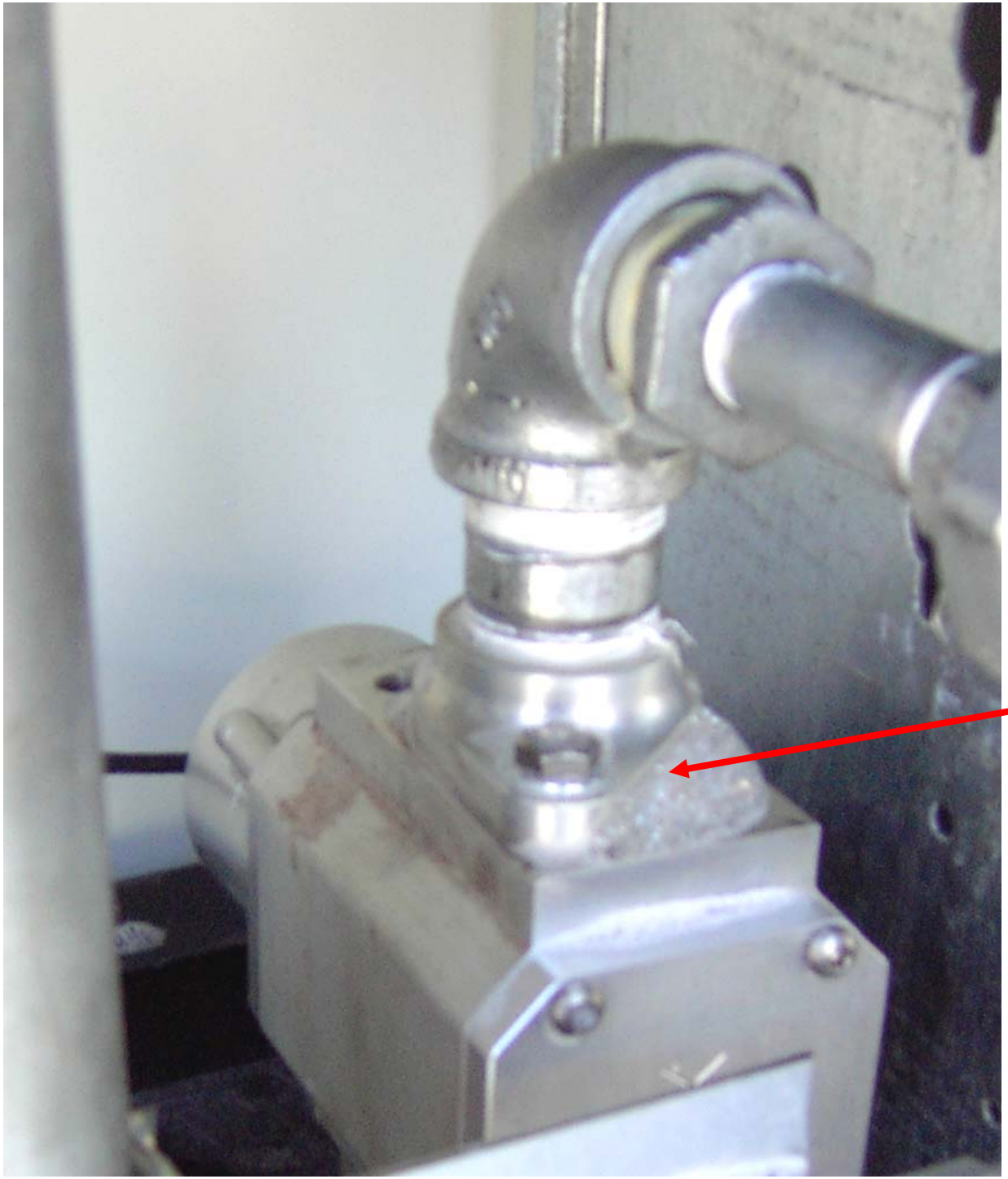
1. 91 Tank / Vapor Cap #323C
2. 87 Tank / Vapor Adaptor #SWV101B
3. 87 Tank / Fill Cap MB #305C
4. 87 Tank / Vapor Cap #32
5. Dispenser. #2 / Nozzle #J37223 , 8' Hose #0136
6. Dispenser #3 / Nozzle #J37221
7. #4 Hose O-Ring
8. #7 Nozzle #J37222
9. #9 Breakaway #594620

Healy CAS

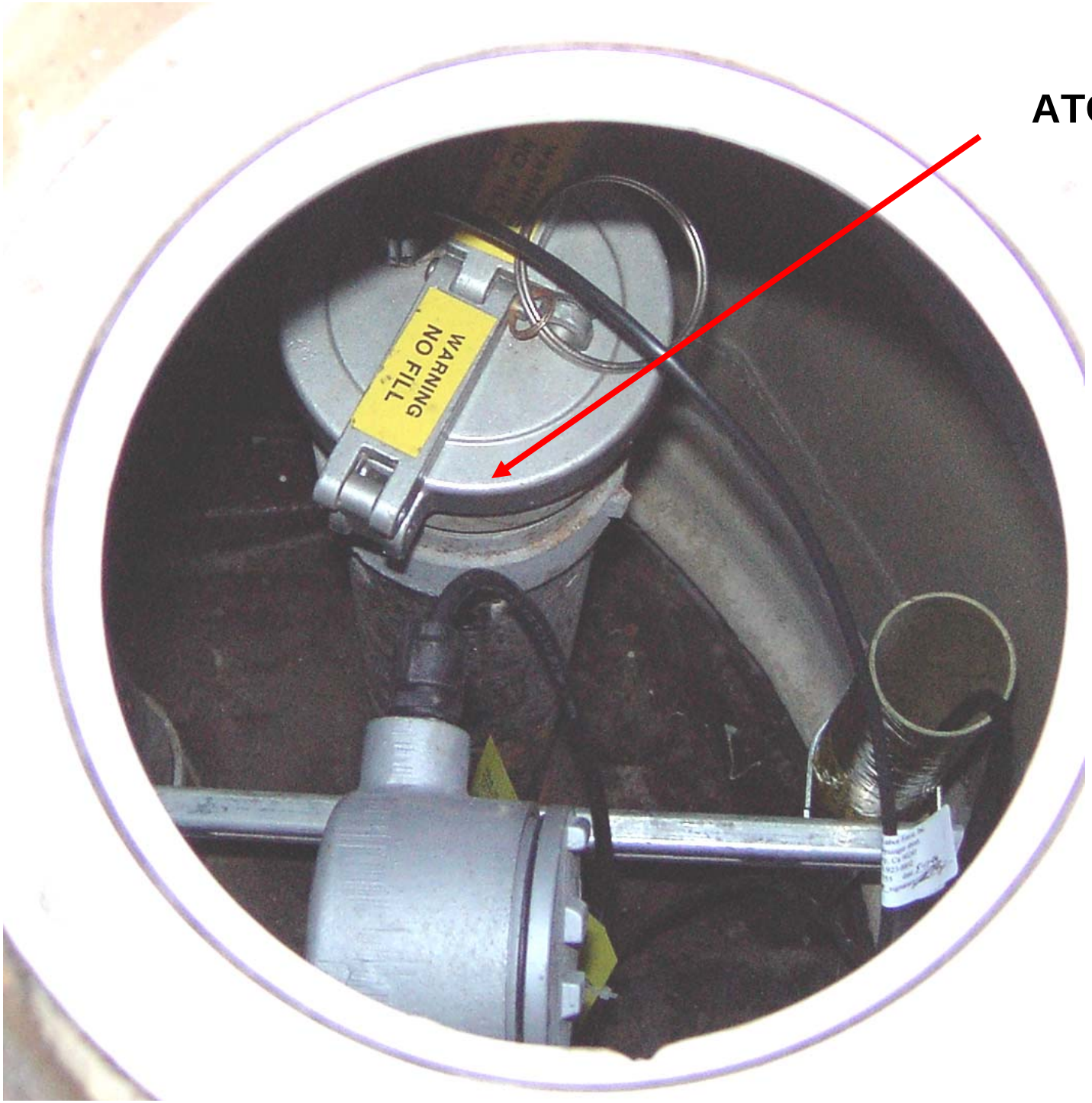
Valve Closed


Valve Can Not Be Closed

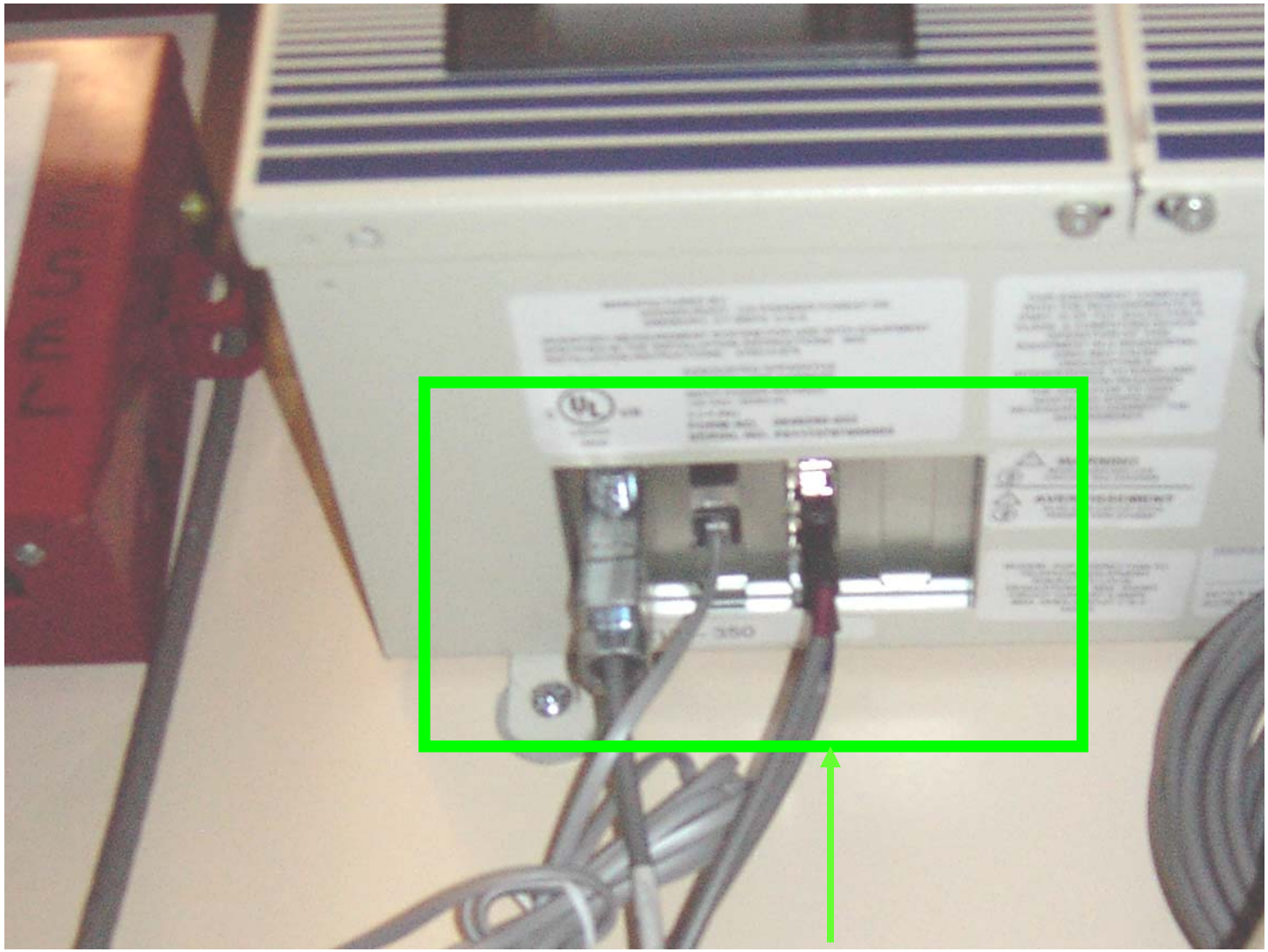

WARNING
Valve Closed


Vapor Flow Meter
Leak

ATG Probe Leaks



Data Acquisition Issues

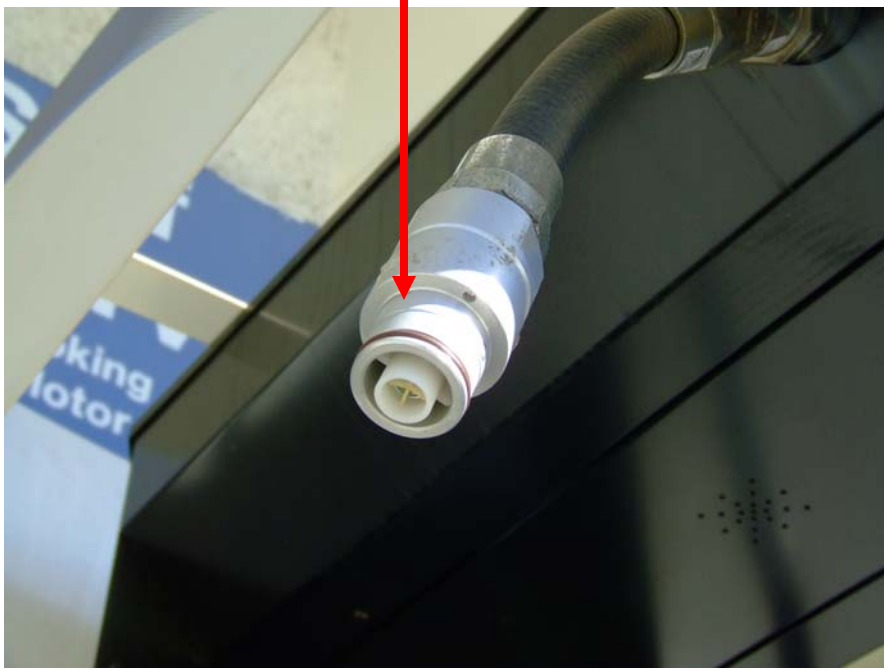


No Dedicated RS-232 Port Installed

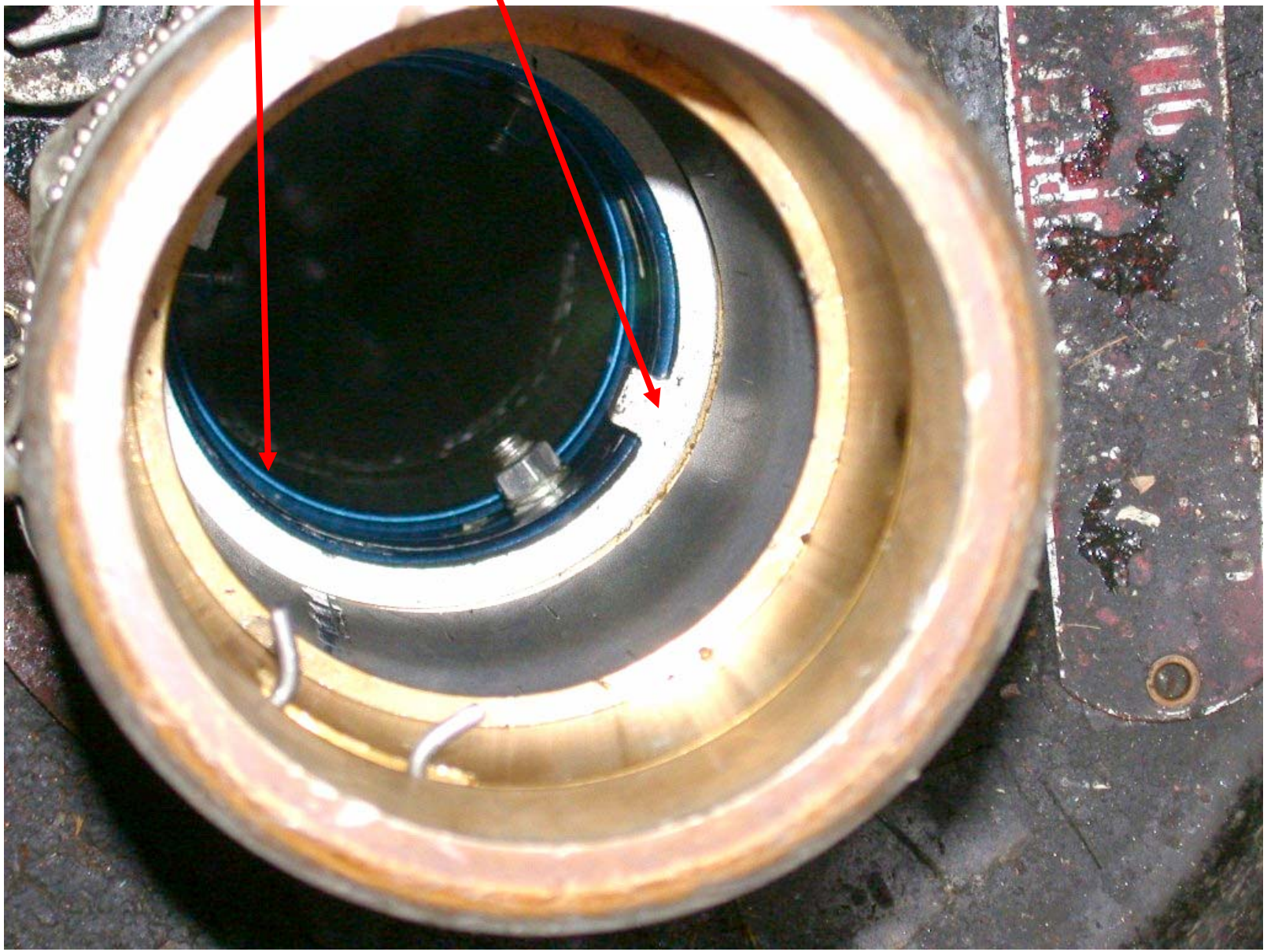
Phase I Vapor Recovery

Over-Pressurization

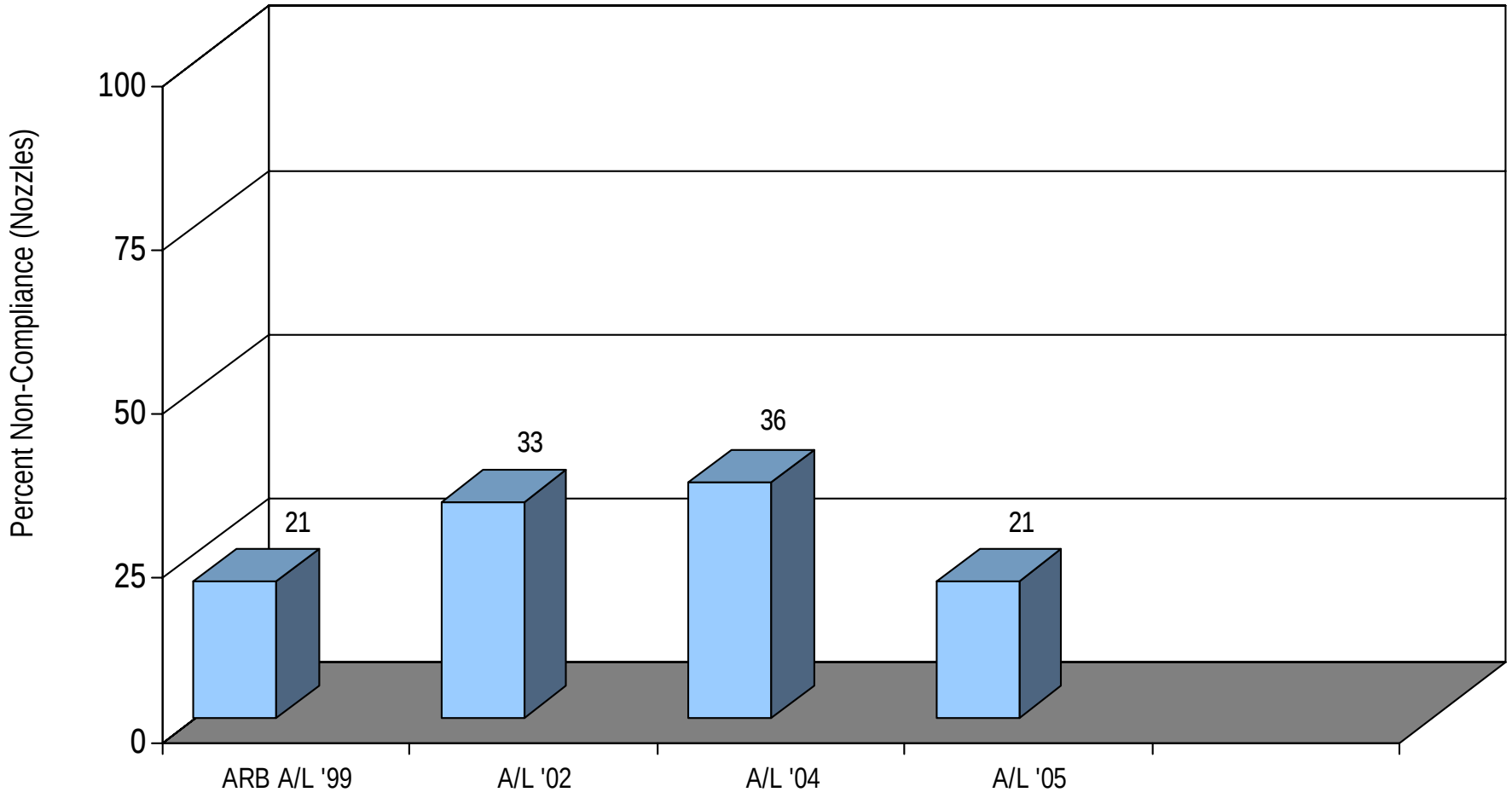
Vehicle Drive-Offs



Phil-Tite & CNI Phase I EVR Components



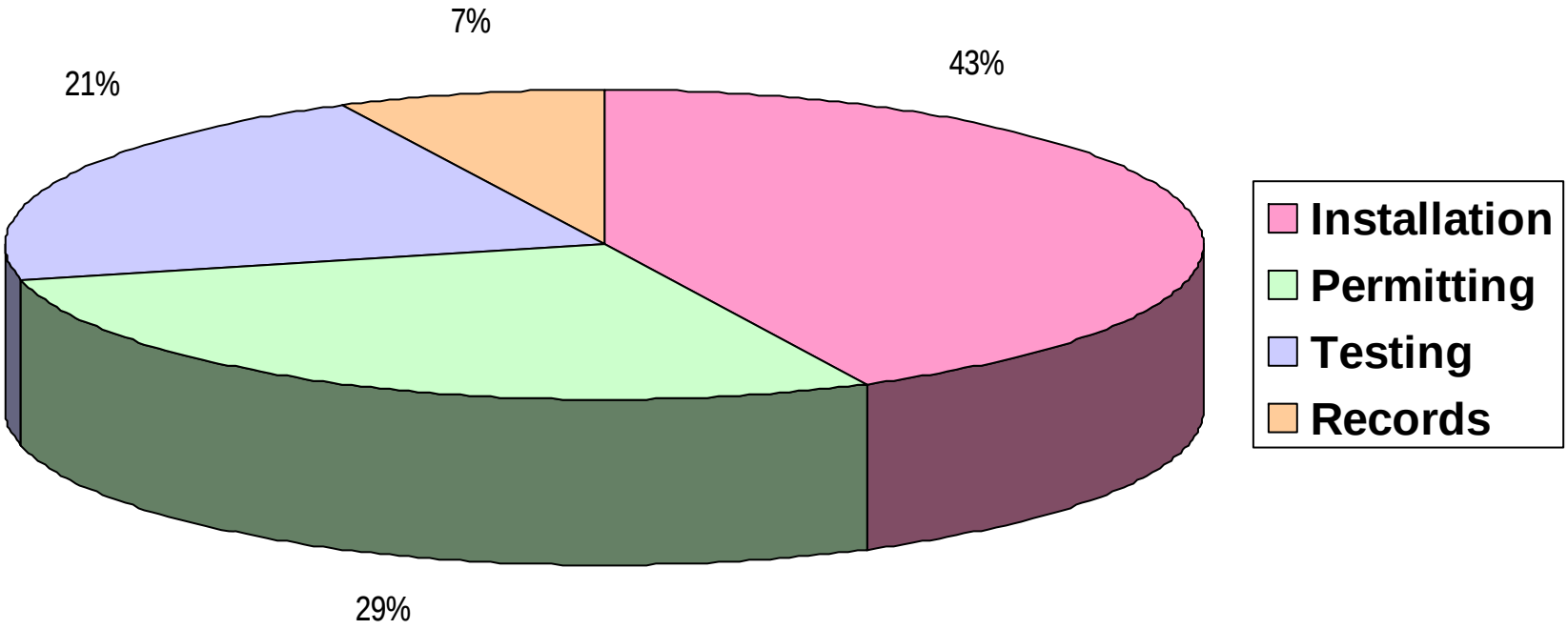
Vapor Recovery System Performance Tests
Air to Liquid Ratio Audits (TP-201.5)



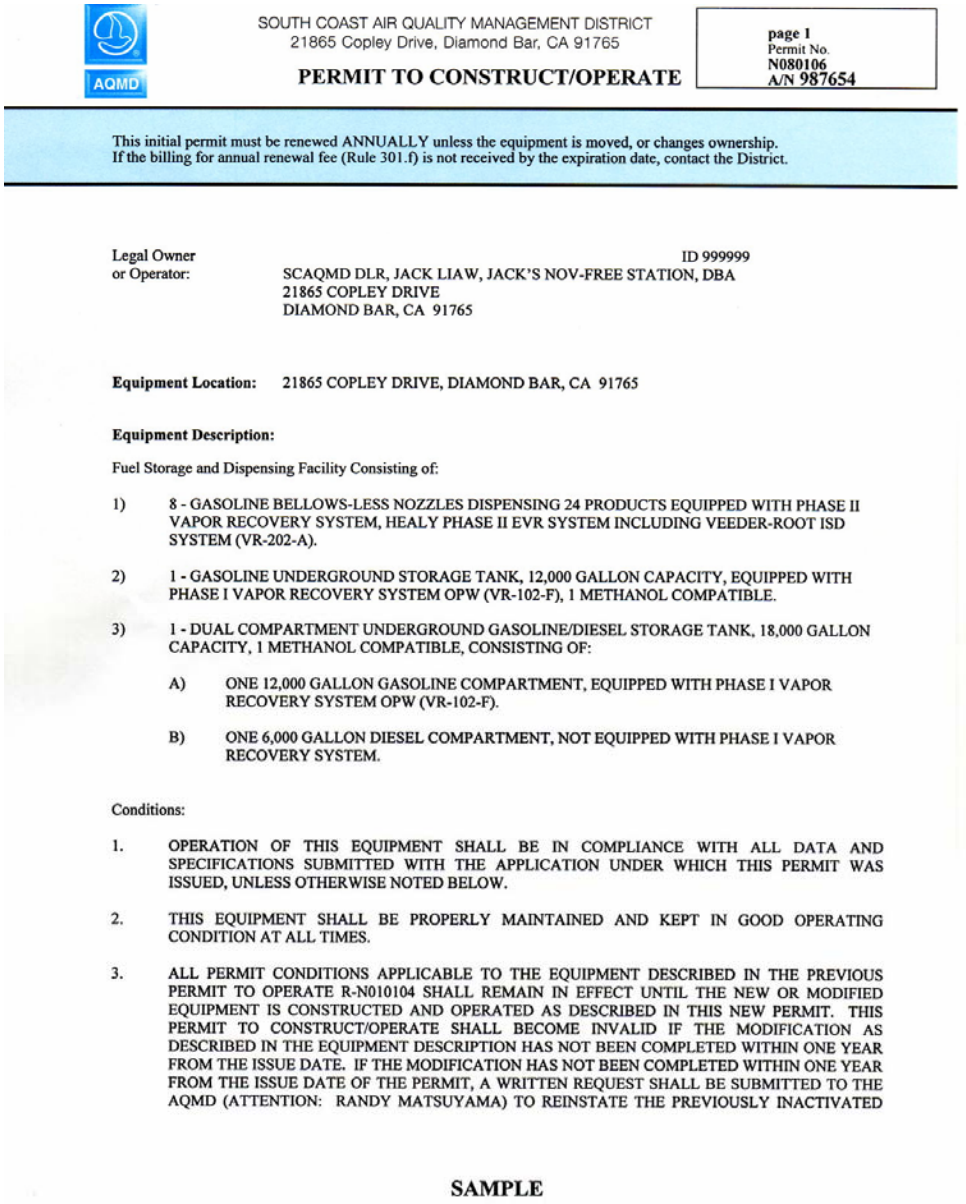
Louis Roberto
TATT Team Audits 2005
September 21, 2005

GDF Audits

NOV Synopsis - 3rd Quarter 2005



ISD & Warning Alarms



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO CONSTRUCT/OPERATE

page 1
Permit No.
N080106
A/N 987654

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner or Operator: ID 999999
SCAQMD DLR, JACK LIAW, JACK'S NOV-FREE STATION, DBA
21865 COPLEY DRIVE
DIAMOND BAR, CA 91765

Equipment Location: 21865 COPLEY DRIVE, DIAMOND BAR, CA 91765

Equipment Description:

Fuel Storage and Dispensing Facility Consisting of:

1) 8 - GASOLINE BELLOWS-LESS NOZZLES DISPENSING 24 PRODUCTS EQUIPPED WITH PHASE II VAPOR RECOVERY SYSTEM, HEALY PHASE II EVR SYSTEM INCLUDING VEEDER-ROOT ISD SYSTEM (VR-202-A).

2) 1 - GASOLINE UNDERGROUND STORAGE TANK, 12,000 GALLON CAPACITY, EQUIPPED WITH PHASE I VAPOR RECOVERY SYSTEM OPW (VR-102-F), 1 METHANOL COMPATIBLE.

3) 1 - DUAL COMPARTMENT UNDERGROUND GASOLINE/DIESEL STORAGE TANK, 18,000 GALLON CAPACITY, 1 METHANOL COMPATIBLE, CONSISTING OF:

   A) ONE 12,000 GALLON GASOLINE COMPARTMENT, EQUIPPED WITH PHASE I VAPOR RECOVERY SYSTEM OPW (VR-102-F).

   B) ONE 6,000 GALLON DIESEL COMPARTMENT, NOT EQUIPPED WITH PHASE I VAPOR RECOVERY SYSTEM.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT WAS ISSUED, UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. ALL PERMIT CONDITIONS APPLICABLE TO THE EQUIPMENT DESCRIBED IN THE PREVIOUS PERMIT TO OPERATE R-N010104 SHALL REMAIN IN EFFECT UNTIL THE NEW OR MODIFIED EQUIPMENT IS CONSTRUCTED AND OPERATED AS DESCRIBED IN THIS NEW PERMIT. THIS PERMIT TO CONSTRUCT/OPERATE SHALL BECOME INVALID IF THE MODIFICATION AS DESCRIBED IN THE EQUIPMENT DESCRIPTION HAS NOT BEEN COMPLETED WITHIN ONE YEAR FROM THE ISSUE DATE. IF THE MODIFICATION HAS NOT BEEN COMPLETED WITHIN ONE YEAR FROM THE ISSUE DATE OF THE PERMIT, A WRITTEN REQUEST SHALL BE SUBMITTED TO THE AQMD (ATTENTION: RANDY MATSUYAMA) TO REINSTATE THE PREVIOUSLY INACTIVATED

SAMPLE

21. If a second alarm occurs indicating that the same problem still exists and gasoline is terminated, the ISD system may be reset to allow for vehicle fueling to resume only if:

A. Fueling points are isolated; or

B. Order for Abatement issued; or

C. All required repairs to correct the problem that triggered the failure alarm have been completed.

Issues / Trends

- Installation Problems
- Current Maintenance Practices (Daily/Weekly/Monthly)
- TP-201.3 (Minimum Repair Strategy)
- Repairs After ISD Alarms
- ISD Data Acquisition

- Questions ?

South Coast AQMD

- General District Information

  www.aqmd.gov
- Rule 461 Information

  http://www.aqmd.gov/rules/htm/r461.html
- Testing Contractor Information

  www.aqmd.gov/comply/Testerweblist.xls

- Louis Roberto
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